Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JEFFREY DAVIS

Appeal No. 2002-0567
Application 09/334,208

ON BRIEF

Before COHEN, PATE, and MCQUADE, Administrative Patent Judges.

Per Curiam

DECISION ON APPEAL

Jeffrey Davis appeals from the final rejection of claims 1 through 13, all of the claims pending in the application.

THE INVENTION

The invention relates "to oil and gas field pumping units, and, more particularly, to control systems for minimizing the run time to reduce wear on the pumping unit and associated pump rods and tubing" (specification, page 1). Representative claims 1 and 9 read as follows:[1]

[1] The following informalities in the claims are deserving of correction in the event of further prosecution before the

1. A method for reducing the pumping duty cycle of a pump assembly associated with a pumping well comprising the steps of:

continuously running an engine;

connecting the engine with a pump assembly through a clutch assembly having a peneumatically inflatable bladder for connecting a hub of the clutch with a clutch plate to transmit rotary motion from the engine to the pump assembly;

determining a selected event to actuate the clutch to connect the engine with the pump assembly; and

providing a pressurized gas on the occurrence of the selected event to inflate the bladder to connect the pump assembly with the engine to remove liquid from the gas well to maintain an inflow of hydrocarbons from a producing formation.

9. A pumping assembly for maintaining hydrocarbon production from a well, comprising:

a pump assembly for pumping liquid from the gas well;

an engine for driving the pumping assembly;

a pneumatic clutch assembly having a pneumatically inflatable bladder for connecting a hub of the clutch with [a] clutch plate to transmit rotary motion from the engine to the pump assembly; and

a control unit for inflating the bladder when needed to pump liquid from the gas well to maintain hydrocarbon production from the well while enabling the engine to run continuously.

THE PRIOR ART

The references relied on by the examiner to support the final rejection are:

Dye	2,634,682	Apr. 14, 1953
Gallaway	3,075,467	Jan. 29, 1963
Mills	3,851,995	Dec. 3, 1974

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examiner. The term "the gas well" in claims 1 and 9 lacks a proper antecedent basis. The Markush groups set forth in claims 2 and 4 improperly use the term "comprising" instead of --consisting of-- (see MPEP 2173.05(h)).

Kuehn, III et al. (Kuehn)	4,392,782	Jul. 12, 1983
Long, Jr. (Long)	4,450,943	May 29, 1984
Turner et al. (Turner)	5,064,349	Nov. 12, 1991

THE REJECTIONS

Claims 1 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mills in view of Long.

Claims 2 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mills in view of Long and Turner.

Claims 3 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mills in view of Long and Gallaway.

Claims 4 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mills in view of Long, Gallaway and Turner.

Claims 7, 12, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mills in view of Long and Kuehn.

Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Mills in view of Long, Kuehn and Gallaway.

Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Mills in view of Long, Gallaway and Dye.

Attention is directed to the appellant's main and reply briefs (Paper Nos. 11 and 13) and to the examiner's answer

(Paper No. 12) for the respective positions of the appellant and the examiner with regard to the merits of these rejections.

DISCUSSION

Mills, the examiner's primary reference, relates to a "[p]ump jack apparatus for recovering oil from an oil producing formation" (column 1, lines 5-6). According to Mills,

> the prime objective is to lift a maximum amount of fluid at the lowest possible cost. In order to attain this goal the pump must be operated when the fluid level within the borehole is above the top of the pump and the well should therefore be shut-in whenever this fluid level is lowered therebelow, because the well will otherwise reach a pumped-off condition which is detrimental to the pump and rod string [column 1, lines 13-20].

In line with this prime objective, Mills proposes to provide:

> - a method for cyclically operating a downhole pump which provides a maximum production rate over a period of time and which prevents injury to the pump apparatus (see column 2, lines 42-45); and
>
> - a control system for measuring abnormal movement of a sucker rod and to provide a signal to actuate circuitry which utilizes the signal for shutting-in the well to thereby avoid continued operation of the downhole pump when a pump-off condition is encountered (see column 2, lines 53-60).

In general, the pump jack apparatus includes a base 10, a Sampson post 12 having a walking beam 14 journaled thereto, a prime mover 16 in the form of either an electrical induction motor or an internal combustion engine, a gear reduction unit 18, cables 21, a horse head 22 and a wellhead 24 (see Figure 1 and column 3, lines 24-39). With respect to the internal combustion engine embodiment, Mills teaches with reference to the circuitry depicted in Figure 4 that:

> [t]he apparatus preferably is provided with 12 volts at S so that the battery of an internal combustion engine can be used as a power source with the contacts of solenoids 42 and 43 being utilized to disengage a clutch means or to interrupt the ignition circuitry of the engine (column 7, lines 4-9).

It is not disputed that Mills responds to all of the limitations in independent claims 1 and 9 except for those relating to the pneumatic nature of the clutch assembly. To cure these shortcomings, the examiner turns to Long.

Long relates to clutch mechanisms for the selective transmission of rotary energy, and more particularly to clutch mechanisms which eliminate or substantially reduce partial coupling, i.e., drag, between the input and output members when the clutch is disengaged (see column 1, lines 5-10).

In discussing the background art and the objects of the invention, Long teaches:

> - A difficulty common in many clutch mechanisms, especially those incorporating plural clutch elements, centers on achieving positive and total mechanical isolation of the input and output components when the clutch is deactivated, i.e., the residual coupling or drag between the input and the output components of a deactivated clutch is undesirable. Such residual coupling or drag may increase standby power requirements and thus reduce overall efficiency, especially in a mechanical system where the clutch is deactivated and the prime mover idles for a significant portion of the operating cycle. Positive disconnection also will typically improve the life of the clutch by reducing scrubbing and sliding of the clutch elements during idle and the frictional heat generated thereby (see column 1, lines 28-45).
>
> - It is a further object of the instant invention to provide a low drag, air operated clutch mechanism which is both compact and straightforward, and easy to manufacture design (see column 2, lines 52-55).

In the Abstract of the reference, Long generally describes the clutch in the following terms:

> A low drag air clutch for use in power transmission systems includes a rotating housing containing a clutch plate, a pair of spaced apart friction disks disposed on opposite faces of the clutch plate and a pneumatic operator assembly. One of the friction disks is fixedly retained in the housing. The other is coupled to the housing through arrays of helical splines which permit limited axial and rotational movement. The pneumatic operator assembly is disposed adjacent, engages and axially translates the movable friction disk. The clutch plate is

coupled to a shaft member through arrays of helical splines. Activation of the pneumatic assembly engages the clutch elements. When deactivated, the rotation of the clutch elements and contact therebetween causes the helical spline arrays to urge the clutch plate and friction disks apart in order to eliminate partial mechanical coupling, i.e., drag, through the clutch.

As for the operation of this clutch, Long further explains:

> Referring now to FIG. 5, compressed air has been supplied to the bladder 64 and the ribbed pressure plate 70 has been urged axially to the left in FIG. 5, forcing the first friction disk 92 into contact with one face of the movable clutch plate 106 and subsequently forcing the movable clutch plate 106 into contact with the second friction disk 96. In this condition, power supplied to the housing assembly 12 through the flange drive member 24 is transferred through the elements of the clutch and out the shaft 120 in a substantially conventional fashion.
>
> Referring again to FIG. 4, the pressure of the air within the bladder 64 has been relieved and the ribbed pressure plate 70, due to the bias of the compression springs 86, has returned to its deactivated position as illustrated in FIG. 4. The arrays of helical splines 90 and 94 and 108 and 110 now cooperate to fully separate and substantially eliminate drag by axially displacing the first friction disk 92 and the movable clutch plate 106 in response to small inertial and frictional forces. As deactivation of the clutch mechanism 10 occurs through the relaxation of the bladder 64 and retraction of the ribbed pressure plate 70, the speed of rotation of the shaft 120 will typically become less than that of the housing assembly 12 and specifically the fixed disks 92 and 96 [column 5, lines 12-35].

In applying Mills and Long to reject independent claims 1 and 9 (see pages 3, 4 and 8 in the answer), the examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the pneumatic clutch taught by Long in the method and pumping assembly disclosed by Mills in order to advantageously reduce drag, increase the life of the clutch, reduce the size of the clutch and facilitate its manufacture.

In essence, the appellant contends that this rejection is unsound because the collective teachings of Mills and Long would not have suggested the combination proposed by the examiner (see pages 3 through 5 in the main brief).

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

In the present case, Mills does not provide any details of the clutch disclosed therein. One having ordinary skill in

the art would look to a suitable clutch to practice the invention of Mills. Long discloses such a clutch, and expressly sets forth a number of reasons as to why this particular clutch is advantageous. These advantages would have provided the artisan with ample suggestion or motivation to incorporate such a clutch into the method and assembly disclosed by Mills, thereby arriving at the subject matter recited in claims 1 and 9.

Hence, the appellant's position that the combined teachings of Mills and Long would not have suggested the combination proposed by the examiner is not persuasive. Therefore, we shall sustain the standing 35 U.S.C. § 103(a) rejection of independent claims 1 and 9 as being unpatentable over Mills in view of Long.

We also shall sustain the standing 35 U.S.C. § 103(a) rejections of dependent claims 2, 5, 7, 12 and 13 since the appellant has not challenged such with any reasonable specificity, thereby allowing these claims to stand or fall with their respective parent claims 1 and 9 (see In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987)).

We shall not sustain, however, the standing 35 U.S.C. § 103(a) rejections of claims 3, 4, 6, 8, 10 and 11.

Claims 3, 4, 6 and 8 depend from independent claim 1 and require the pressurized gas for inflating the bladder to be supplied from natural gas exiting the gas well. Claims 10 and 11 depend from independent claim 9 and require the control unit to connect gas from the well to the pneumatic clutch for inflating the bladder. The examiner's reliance on Gallaway for these features, which the basic Mills-Long combination admittedly does not account for, is not well taken.

Gallaway relates to a well pump having a pumping unit embodying an air motor 30 driven by gas from the well. According to the examiner (see pages 5 through 9 in the answer), it would have been obvious in view of this disclosure to use gas generated from the well to inflate the bladder in the basic Mills-Long combination to lower the cost of operation.

The examiner's position here is unsustainable. While Gallaway explicitly teaches the use of pressurized gas from a well to operate an air motor which in turn operates a pump, there is no teaching or suggestion therein, except that derived from impermissible hindsight, to use pressurized gas

to operate a clutch of the sort in question. The other references applied against the claims in question do not overcome this deficiency.

SUMMARY

The decision of the examiner to reject claims 1 through 13 is affirmed with respect to claims 1, 2, 5, 7, 9, 12 and 13, and reversed with respect to claims 3, 4, 6, 8, 10 and 11.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

IRWIN CHARLES COHEN
Administrative Patent Judge

WILLIAM F. PATE, III
Administrative Patent Judge

JOHN P. MCQUADE
Administrative Patent Judge

BOARD OF PATENT APPEALS AND INTERFERENCES

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